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Nutritional Quality Control and Feedbunk Management of Feedlot Cattle

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Errors Inherent in Percentage Feeding Cause Problems

Small errors in the nutrition and management of feedlot cattle frequently spell the difference between success and failure as a cattle feeder. Some frequently insignificant appearing factors may at times allow cost of gain to increase up to $4 to $5 per hundredweight.

In general, most of the costly errors observed occur when feeders, in attempting to feed more cattle, use the percentage method of feeding cattle. The percentage method differs from the head per day method used extensively on Corn Belt farms. Under the old system, the feeder fed, for example, 2 pounds of supplement, 10 pounds of corn, and 30 pounds of silage per head per day. As the cattle feeder wanted to move the cattle up on feed, he still fed 2 pounds of supplement and just added additional pounds of corn on a gradual basis. As the cattle consumed more corn, they ate less silage.

In many respects this unscientific appearing system has many natural quality control factors built into it. Under the "Corn Belt" system, the most critical ingredient, the supplement, is measured out in a daily basis in the following manner; i.e., 148 cattle x 2 lbs. of supplement = 296 lbs. or 6-50 lb. paper bags for good measure.

It is an easy task to gradually move cattle up onto a high concentrate ration under the "Corn Belt" system simply by increasing daily grain fed. This results in infinite combinations of rations as opposed to the percentage system where a feedlot is limited to 3 or 4 rations. For larger feeders, the percentage system of cattle feeding is probably more practical in terms of reduced labor costs and its ease of mechanization. However, all of you would probably be better feeders if you knew each day how much of each ration ingredient each pen of cattle consumed.

Moisture Variations in Commodities Can Be a Feeders Demise

Modern processing of feed ingredients makes quality control more complex simply because we are making the moisture content of certain ration components more variable. Ten pounds of corn silage contains somewhere between 2 and 5 pounds of actual dry matter. Ten pounds of high moisture grain contains somewhere between 5 and 8.5 pounds of dry matter. Steam flaked milo can seldom be flaked day in and day out to a variation of less than 4 percent in moisture content. Ten pounds of alfalfa hay contains somewhere between 7.5 and 9.2 lbs. of dry matter.

Are these small variations in moisture content important? A steer eating 20 lbs. of 15.5 percent moisture corn would only have to eat 18.78 lbs. of 10 percent moisture corn to obtain the same nutrients. Or on the other hand, if 15.5 percent moisture corn and 10 percentmoisture corn cost the same, the latter would result in

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A summary of the presentation given at Cattle Feeders Day, October 1, 1971.

a reduction in cost of a little over 6 percent. This is not much, but cattle feeders have spent hundreds of thousands of dollars for steam flakers which will improve the feeding value of milo about that amount, or 6 percent is probably equal to the same total benefit in feedlot performance of using antibiotics, grub control, Vitamin A, trace mineral mixtures, and the unknown factors in alfalfa de-hy at one time.

Today the classic state of the art is an electronic feed mill which can weigh out 1,000 lbs. of silage a minute with an accuracy of ± .005 percent, and a feedlot nutritionist doesn't consistently know within 200 pounds of how much dry matter that represents.

The failure of many cattle feeders to tie down and correct for moisture content in buying, and day to day ration mixing, is costing cattle feeders hundreds of thousands of dollars each year due to ration imbalance and failure to take advantage of better buys in feed commodities. These same problems may cause the financial ruin of other feeders because the same errors affect inventory control.

Underfeeding Diethylstilbestrol

Of all the feed additives available to cattle feeders, D.E.S. is probably the most valuable in a steer feeding program. Properly used it will increase both rate and efficiency of feedlot gain up to 16 percent. When considering the total cost of feeding cattle on today's market, Stilbestrol can reduce cost of gain up to $4 per hundred compared to untreated steers. A few cattle feeders do not seem to understand how to use this additive. Figure 1 shows Stilbestrol response curves for various levels of trans-stilbestrol and the effect on rate and efficiency of gains (page 3).

These data from Ohio State University show clearly what a feeder might expect to lose in terms of Stilbestrol response from underfeeding this additive.

Many feeders fail to recognize the value of Stilbestrol in the early phases of the feeding period. Stilbestrol response on growing type rations is frequently higher on a percentage basis than the response to very high concentrate finishing rations. A good feeder will make sure he supplies all of the Stilbestrol provided by the federal regulations on an accurate and consistent basis.

Quality control problems have caused observed levels of D.E.S. fed to drop to 4-5 mg. per head per day due to faulty final formulation at some feedlots. This would represent a probable 75 percent loss of response. Other feeders have been observed to be in violation from over-feeding due to similar errors. Supplement inventories and head count should be checked daily to assure proper D.E.S. usage in any good feedlot.

Using the Wrong Ration

A ration balanced for an 800-pound yearling steer will be out of balance for a 400-pound calf. Because the nutrient relationships change rapidly on light-weight cattle, it is unlikely that one ration can be balanced to serve over about 100 lbs. weight range in light-weight calves. The optimum ration for 300-400 pound calves would be unnecessarily high in protein for a 500-pound yearling. To avoid these problems, it is suggested that rations be limited in terms of usage to 100 lb. weight intervals between 300 and 600 lbs. on calves and that any ration on file at a feedlot be labeled in terms of the weight range for which the ration is a reasonable balance.

Failure to Recognize Inventory Losses and Processing Costs

Many cattle feeders, when evaluating commodities, do not account for processing

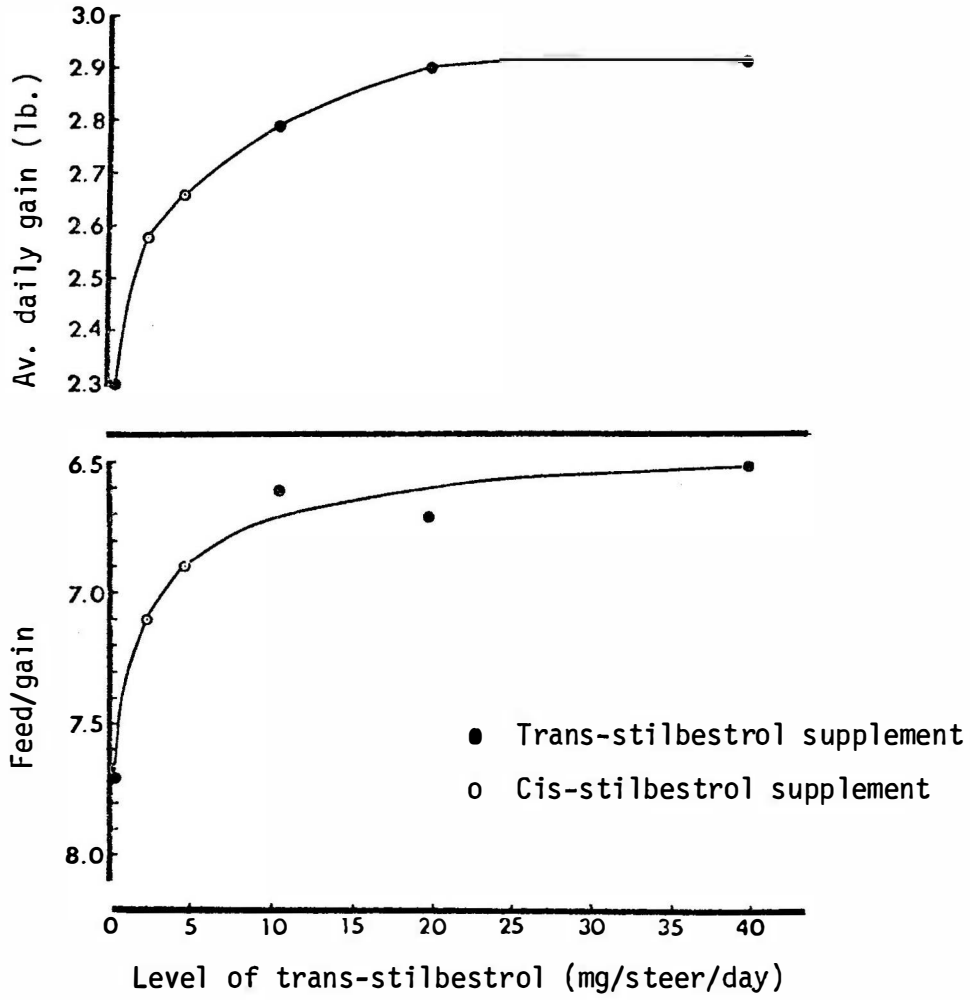

Figure 1. Relation of gain and feed efficiency responses to Trans-stilbestrol intake.

costs when selecting feed ingredients. Beet pulp and steam flaked milo have about the same nutritional value on an absolute dry matter basis. Assuming equal value on a dry basis (for illustration of a point), the following cost analysis could be made:

Typical Situation	Milo	Beet Pulp
Delivered price	$2/cwt.	?
Moisture content at purchase	15%	9%
Handling shrinkage	1%	1%
Cleaning and processing shrinkage	3%	0[a]
Processing cost	15¢cwt.[b]	0[a]

[a]Beet pulp fed without additional processing. [b]Total steam flaking apparatus operation cost.

Solution			
Milo cost/unit of dry matter	$2	÷ 0.85 =	$2.35
Handling shrinkage	1%		0.0235
Cleaning and processing shrinkage	3%		0.0705
Processing cost			0.15
Total cost per 100 lbs. of dry matter = 100 lbs. of dry matter from beet pulp is assumed to be equal to			$2.594
Less 1% for handling shrinkage			-0.02594
		TOTAL	$2.568
Conversion to 9% moisture purchase basis is $2.568 x 0.91 =			$2.3369

In this situation, the feeder could pay $2.33 for beet pulp to compete with $2.00 milo under the conditions stated in this situation.

Processing costs on some feed commodities are much more than on others, and any feeder should take these factors into account. It is interesting to note that many of the old line feed manufacturers use a number of commodities which are seldom seen on a feedlot mill, and often refuse to handle other commodities which seem to be essential to most feedlot managers. Could they know something that feedlot mill managers haven't experienced yet?

Poor Bunk Management

Feedlot cattle given half a chance tend to become quite uniform on a day to day basis in the amount of feed nutrients they will consume. If a feedlot has good ration quality control and proper feeding technique, then daily dry matter intake on a given ration should remain fairly constant. Symptoms of poor bunk management may be observed by the customer of the custom lot when he sees a daily feed billing like the one shown in Figure 2. Of all the information on the billing, cost of feed is probably the most meaningful, since it can be presumed that cost may represent quantity of feed dry matter better than pounds fed.

Date	Ave. Daily Feed Cost	Date	Ave. Daily Feed Cost
2-4	$ .77	2-11	$ .26
2-5	.78	2-12	.25
2-6	--	2-13	.65
2-7	.15	2-14	.74
2-8	.20	2-15	.81
2-9	.97	2-16	.26
2-10	.65	2-17	.63

Average daily feed cost for period = $.5085.

Figure 2. Daily feed billing, Pen 13.

Contrast the data in Figure 2 with the data in Figure 3 which was obtained at an Oklahoma feedlot with an experienced feed foreman.

Date	ADF	Date	ADF
3-7	19.89	3-14	22.16
3-8	20.96	3-15	22.16
3-9	23.38	3-16	22.16
3-10	20.96	3-17	22.16
3-11	19.40	3-18	22.16
3-12	20.75	3-19	23.24
3-13	22.16	3-20	24.59

Figure 3. Average air dry (10% moisture basis) feed consumed by pen 5, 3-7-1970 to 3-20-1970.

Figures 2 and 3 are not far from the extremes seen in feedlots. The important point is that the feeder represented in Figure 3 does know just what his cattle are consuming and could, in a few seconds, calculate Stilbestrol intake or that of any other feed nutrient or additive.

Daily feed intake data properly obtained and interpreted should be used as a barometer as to the well-being and performance of the cattle. Any feeding system

which obscures or makes meaningful access to the data difficult probably is not going to be very successful. If a feeder uses silages, wet grains, or frequently changes commodities in his rations, there is no alternative except to feed on some standard dry matter basis.

A good feed foreman will always strive to obtain maximum nutrient intake by his cattle. The techniques for doing this vary from man to man.

Each additional pound of dry matter consumed by cattle on feed will increase gains and frequently reduce cost of gain up to 5 or 6 percent. A common mistake made in many feedlots, in an attempt to avoid fluctuations typical of those shown in Figure 2, is to either overfeed or to limit feed. Either of these two techniques are usually bad. For the feeder who wants the efficiency brought about by that last pound of feed consumption, stale feed, regardless of how it is processed, will deny it to him. Cattle fed from bunk lines should clean up the bunks at least once a day. Slick bunks should not be associated with poor feeding technique. Cattle will usually appear hungry and restless at anytime when they are out of feed and expect to have feed in the bunk. Probably the one characteristic which makes a good feeder is consistency. He can be counted on by both management and the cattle to have feed in the bunks when they expect it.

In many cases good feeding foremen are frustrated by management, simply because they must have feed in the bunk at the time the feedlot manager thinks it should be there, and very few feedlot managers eat out of the bunk with the cattle.

No job at a feedlot is as important as that of the man who directs the feed to the cattle. As ever, "The Eye of the Master Fattens the Stock" and it always will.

Starting Cattle on Feed

At no time is it more important for a cattle feeder to know the daily dry matter or nutrient intake than when he is starting new cattle on feed. Feed intake in itself is the best indicator of impending problems. Sick cattle usually don't eat well, but often a careful record of feed intake will show up health problems before most feeders can observe anything wrong about the appearance of the cattle.

There are a number of useful medications which when properly used via the feed can reduce the incidence of sickness and aid the cattle in getting on feed. Aureo S 700^{R} has been very effectively used as an aid in getting cattle on feed. However, many feeders fail to receive any benefit from this additive simply because they don't get the proper dosage into the cattle when they need it. Just arrived feedlot cattle will eat somewhere between no feed and up to 20 lbs. of dry matter, depending upon a number of factors. The feeder who puts one dose of medication in 20 lbs. of dry matter and has his cattle consume 3 lbs. of dry matter can not expect results from the medication.

In starting cattle on feed, I prefer to start the cattle on a high energy nearly all roughage ration. In Oklahoma we receive the majority of cattle on a ration being about 90% silage and about 10% grain and supplement on a dry matter basis. This program is successful most of the time and is probably the best in use. If the silage is too high in moisture (over 68%), some cattle won't eat it well. A smart cattle feeder noting consumption problems may at times offer the cattle some dry hay with the silage ration. California and Arizona feeders have for years started cattle on high alfalfa hay rations with reasonable success. The key to any successful starting program is in the quality of the roughage that is used and in the nutritional balance of the ration. Recent research at California and

Oklahoma tends to indicate that optimum feedlot efficiency is obtained when the cattle are moved up to higher energy feeds much more rapidly than believed in the past. A feedlot's records of daily feed consumption (on a dry matter basis, if wet feeds are used) are the key to being able to move up. There is no sense in moving up from the starter ration (assuming it is nutritionally satisfactory) until the cattle have established fairly uniform eating patterns. More cattle are probably foundered and otherwise fouled up by moving them up to a higher concentrate ration before they have become adapted to the feedlot and its feeding systems.

Once cattle are ready to be moved up on feed we prefer to reduce the roughage content in several uniform steps, observing the cattle very carefully following each of these changes. Feed intake records and feeder judgment must dictate the rate and conditions of these changes.

The Use of Second-Rate Commodities

At times when feed prices are high, the temptation to save dollars on feed purchases has caused many problems. Today the feedlot should tighten up its quality control program in terms of inspection of each purchase it makes. Each feedlot is characterized by a class of commodity suppliers and elevators as to the minimum quality ingredient that they will accept. Are you the kind of feeder that they can pass off sample grade corn on as US No. 2? How much water should be in your molasses? Is all hay, hay to your feedlot? What is the maximum moisture that you will accept in your supplement? 8 percent, 9 percent, 10 percent, 11 percent, 12 percent, 13 percent, 14 percent? Or will you accept anything just as long as it will come out of the bin?

There is a class of supplier whom you can rely on to always consistently meet the industry quality standards. This class of supplier seldom quotes the lowest price, but usually delivers the highest value.

Your quality control must begin with the man who supervises the receiving of commodities. He has to be able to recognize quality, and to have the authority to accept or refuse delivery of anything which is not up to your standard. Do not even allow off-quality ingredients to be unloaded. Too many times spoiled commodities have a very high negative value and that load of grain that was so poor that you didn't have to pay for may have cost you $5,000 by possible damage to the livers of the cattle by alfatoxins or by simply causing the permanent loss of a pound a day of feed intake on cattle on the finishing ration.

Wasted Money on Useless and Unnecessary Feed Additives and Nutrients

There was never a cattle feeder who did not wish for some device or additive which would improve the efficiency of his cattle. This very reasonable desire makes all of us associated with the industry at least set up to be taken by the super salesman. The inherent desire to get the jump on the competition really sets up a situation which allows a number of worthless and marginal products to sell at a volume with the proven and useful additives. With the exception of the hormones and, possibly, anabolic agents, no feed additive is worth as much to you, the cattle feeder, as you would gain in buying 11 percent moisture corn at 15.5 percent moisture price, or by doing a first class job of flaking a quality milo versus an average job on average milo. Frequently it will take less of your time to improve a minor, but significant, area in quality control which will gain you 5 percent efficiency than it will to listen to some salesman with panacea which could only cost you money.

There are a number of very worthwhile feed additives which will pay the bills, but the point to remember is that proven additives come slowly and were proven only after years of careful research. The major universities and established feed and drug companies will do years of research on products before they are ready for the cattle feeder. It is very unlikely that any additive which you have not read about in research reports and the feedlot trade publications has much promise. The worthless additive, nutrient, or commodity is most often sold with the excuse that the establishment does not recognize its value or that universities have not got around to testing it yet.

The successful cattle feeder must improve the efficiency of all aspects of his business. The only real progress in the efficiency of feeding cattle will come through economies which result from people doing their present jobs with greater knowledge, skill, and dedication. Those who plan to continue feeding cattle will become more efficient.